

MEMORANDUM

DATE September 1, 2020

PROJECT NO. 2017-0081

TO Jennifer Lincoln
Conservation Administrator
Falmouth Town Hall
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Sent via email: jennifer.lincoln@falmouthma.gov

FROM Woods Hole Group
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Memorandum #3: Task 1 – Neighborhood Level Risk Summaries

The Town of Falmouth has contracted with Woods Hole Group to complete a coastal flood vulnerability assessment of parcels and individual neighborhoods throughout the Town of Falmouth. The goals of this project are to:

- Provide an analysis of all parcels at risk of coastal storm flooding through 2070;
- Summarize the roads at the highest risk of flooding within each neighborhood;
- Summarize the flood risk to all roads within each neighborhood;
- Identify the number of parcels and roads within each neighborhood likely to be impacted by daily tidal flooding by 2030 and 2070; and
- Produce high-quality maps and tables presenting neighborhood-level results.

This memorandum provides documentation of project deliverables developed to address the goals listed above. Major tasks accomplished include 1) analyzing the risk of inundation from coastal storm surge to parcels through 2070, 2) determining which roads face the highest risk of flooding within each neighborhood, as well as the flood risk for each individual road within each neighborhood, 3) analyzing the risk from daily tidal flooding to parcels and roads using projected mean high water (MHW) levels for 2030 and 2070, and 4) creating a series of maps and tables presenting neighborhood-level results, described below.

Coastal Storm Flooding Analysis of Parcels

[01_ModelResults_byNeighborhood_Maps.pdf](#) includes detailed neighborhood-level maps displaying coastal storm flood risk for parcels. Maps are labeled with street name and street number, which will allow Falmouth residents to easily identify individual parcels of interest.

[02_ModelResults_byNeighborhood_Tables.pdf](#) provides summary statistics for each neighborhood, including the number and percent of parcels facing different levels of inundations risk for present day, 2030, and 2070.



Coastal Storm Flooding Analysis of Roads

[03_RoadRiskScores_byNeighborhood_Maps.pdf](#) displays detailed neighborhood-level maps with composite risk scores for each road indicating the total risk based on the probability and consequence of inundation. Maps are labeled with street names allowing viewers to easily identify roads of interest.

[04_RoadRiskScores_byNeighborhood_Tables.pdf](#) provides a summary table of the top ten roads vulnerable to storm flooding across the entire Town of Falmouth, as well as a table for each neighborhood, listing the probability of flooding for present day, 2030, and 2070 for each road. Note that some roads with the same ID number are listed twice, as these are two different segments of the road, split where the road crosses over a bridge. The ID number provided within these tables corresponds to the ID number listed in the road shapefile.

Daily Tidal Flooding Analysis of Parcels

[05_MHW_Structures_byNeighborhood_Maps.pdf](#) provides detailed neighborhood-level maps displaying the risk of daily tidal inundation to private structures due high tide flooding in present day, as well as in the future due to sea level rise. In this case, private structures were chosen over parcels as the basis of analysis, as twice-daily tidal inundation of a structure is more significant than inundation of open space within a parcel. Maps are labeled with street name and street number.

[06_MHW_Structures_byNeighborhood_Tables.pdf](#) presents the number and percent of structures at risk of inundation as a result of daily tidal flooding for present day, 2030, and 2070.

Daily Tidal Flooding Analysis of Roads

[07_MHW_Roads_byNeighborhood_Maps.pdf](#) includes detailed neighborhood-level maps displaying the risk of daily tidal inundation due to sea level rise for roads for present day, 2030, and 2070.

[08_MHW_Roads_byNeighborhood_Tables.pdf](#) provides a summary table of the top ten roads vulnerable to daily tidal flooding for the whole town, as well as tables for each neighborhood listing all roads vulnerable to daily tidal flooding.

Coastal Storm Flooding Neighborhood Summary Sheets

[09_Flooding_Summary_Sheets.pdf](#) presents the present-day storm flooding probability map and a summary table for the number and percent of parcels vulnerable to flooding for different inundations risks for present day, 2030, and 2070. A summary table is also provided for the top five roads vulnerable to coastal storm flooding for present day, 2030, and 2070 for each neighborhood. Recent pictures of notably vulnerable neighborhood building and/or roads are also included.

Woods Hole Group appreciates the opportunity to support you in this project. Please contact me if there are any questions or requirements for additional information.

Sincerely,

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